Class: Biology

Unit: The Cell

Topic: Diffusion/Osmosis: “Hey come back here!” “No, I don’t like you!”

**CONTEXT OF LESSON:**

**SUMMARY:** This lesson is to explore the movement of substances through a semi-permeable membrane through diffusion and what causes the substances move either into or out of the cell.

**Day 1:** Today we will start off by reviewing the vocabulary pertinent to this lesson in order for the students to recall that information. We will then go through a power point presentation on diffusion and also view a short video clip. After that we will proceed on to the day 1 instructions for our lab activity. They will be given a copy of the lab and for home work they are to fill out the questions related to day 1. They will also receive a handout corresponding to the video and power point.

**Day 2:** Today we will continue with the lab activity and follow the instructions for day 2. For homework they will need to answer the questions related to our day 2 activities.

**Day 3:** The lab will be completed today which will be followed by a group discussion regarding the lab and the concepts we have learned. Their homework will consist of finishing the questions in their lab packet, which will be due the following day.

**CONTEXT:** This is the 8th lesson in this unit. The students have already been introduced to the vocabulary words and have also learned about the cell membrane and how thing move into and out of the cell.

**TIMING:** This lesson will be stretched out over a period of 3 days, each consisting of 45min periods.

**Instructional Objectives:** **Students will be able to…**

1.) Identify whether a solution is hypertonic, hypotonic, or isotonic, and explain why.

2.) Explain the meaning of concentration gradient and high and low concentration.

3.) Read a triple beam balance.

4.) Determine the mass of an object using a weighing boat by subtracting its mass from the mass of the object + the weighing boat.

**Learning Standards:**

**LS1 - All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species).**

***LS1 (9-11) INQ+SAE+FAF -1***

*Use data and observation to make connections between, to explain, or to justify how specific cell organelles produce/regulate what the cell needs or what a unicellular or multi-cellular organism needs for survival (e.g., protein synthesis, DNA replication, nerve cells).*

**LS1 (9-11)-1 Students demonstrate understanding of structure and function-survival requirements by**…

**1a** explaining the relationships between and amongst the specialized structures of the cell and their functions (e.g. transport of materials, energy transfer, protein building, waste disposal, information feedback, and even movement).

**Teaching Standards:**

RIBTS **Standard # 2:** Teachers create learning experiences that reflect an understanding of central concepts, structures, and tools of inquiry of the disciplines they teach

* **2.3** select instructional materials and resources based on their comprehensiveness, accuracy, and usefulness for representing particular ideas and concepts.

RIBTS **Standard # 4**: Teachers create instructional opportunities that reflect a respect for the diversity of learners and an understanding of how students differ in their approaches to learning.

* **4.2** use their understanding of students (e.g., individual interests, prior learning, cultural experiences) to create connections between the subject matter and student experiences.

RIBTS **Standard #5:** Teachers create instructional opportunities to encourage students’ development of critical thinking, problem solving, and performance skills.

* **5.5** use tasks that engage students in exploration, discovery, and hands-on activities

RIBTS: **Standard # 6:** Teachers create a learning environment that encourages appropriate standards of behavior, positive social interaction, active engagement in learning, and self-motivation.

* **6.3:** Organize and allocate the resources of materials and physical space to support active engagement of students.
* **6.4:** Provide and structure the time necessary to explore important concepts and ideas.

RIBTS: **Standard # 8**: Teachers use effective communication as the vehicle through which students explore, conjecture, discuss, and investigate new ideas.

* **8.1:** Use a variety of communication strategies (e.g., restating ideas, questioning, offering counter examples) to engage students in learning.
* **8.4:** Emphasize oral and written communication through the instructional use of

discussion, listening and responding to the ideas of others, and group interaction.

**Materials:**

**Per Group**

* Water
* Vinegar (acetic acid and water)
* 3 eggs
* Corn syrup, water, and salt
* 3 plastic cups
* Triple beam balance
* Power point on diffusion
* Lab packets
* Homework sheet
* Video clip

**INTERNET RESOURCES:**

* **Lab:** [**www.rbrhs.org/.../​LAB%20Egg%20Lab%200910.doc**](http://www.rbrhs.org/.../​LAB%20Egg%20Lab%200910.doc)
* **Video Clip:**
* **Power point:**

**ASSESSMENT:**  The assessment for this lesson is ongoing. Day 1 will be assessed through the worksheet relating to the power point presentation and also the video clip. Also the questions throughout the lab will also help give me an idea on how the students are comprehending the material. Finally, the group discussion following the conclusion of the lab, will allow me to see what concepts might still be unclear and need to be reviewed.